



**Barcelona
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Centro Nacional de Supercomputación



EXCELENCIA
SEVERO
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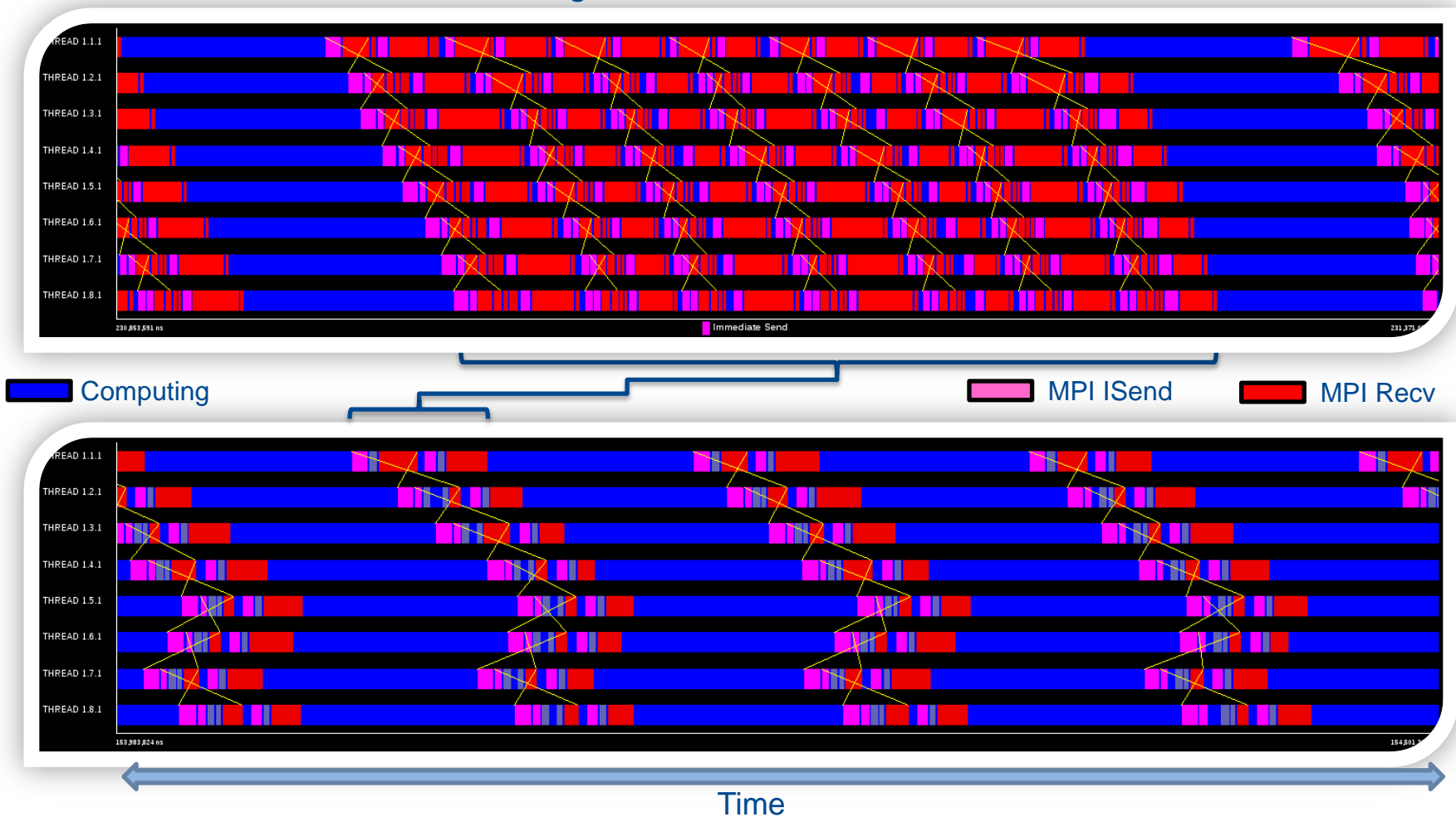
NEMO v3.6 optimizations using the BSC performance tools

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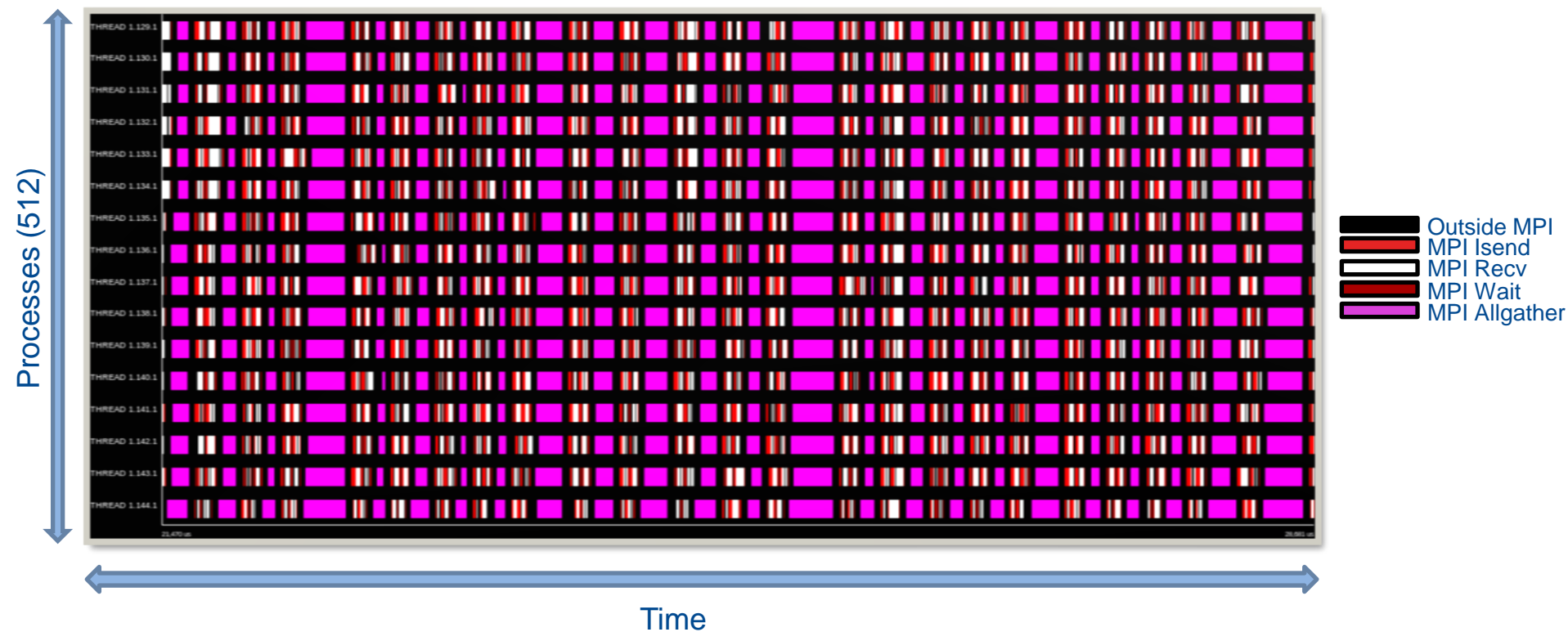


- Communications routine
 - Consecutive messages between the same senders/recipients → Overhead
 - It's more efficient to group consecutive messages in a bigger one

MPI messages duration: Before vs After



- Sea-ice horizontal diffusion routine
 - Convergence check with global communications in every loop iteration
 - Only 20% of the time is invested in computation



- Reduce the number of global comms. to n/x , where x is a customizable parameter

- After both improvements were applied, the maximum speedup was increased by 23%

